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ABSTRACT

The present study involved the evaluation of the effectiveness of four types of preschool programs on the educational development of lower and middle class children. Middle class children were exposed to "unit" and "cognitive" based preschool programs; lower class children were exposed to "day care" and Montessori programs. Comparison of the children's performances in cognitive, behavioral-social, sensory-motor, and language areas to appropriate control groups indicated that the type of program presented was not significant. However, preschool educational experience, irrespective of program, was significant in facilitating educational development. Furthermore, middle class children excelled beyond the lower class children. (Author)

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# EFFECTIVENESS OF PRESCHOOL PROGRAMS AS A FUNCTION OF CHILDRENS' SOCIOECONOMIC STATUS

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Past research has generally supported the idea that preschool education (irrespective of curricula employed) facilitates cognitive, motivational and social-emotional development at least on a short-term basis (Bissell, 1971; Gray & Klaus, 1970; Weikart, 1970). Recent comprehensive comparisons of preschool curricula - generally along a continuum from preacademic, skill oriented models to discovery, to child development oriented models - have produced some findings in favor of different models affecting different areas of development (Karnes, 1969; Miller & Dyer, 1971). For example, Karnes found that on Stanford Binet and ITPA instruments, children in the Laboratory Traditional, Direct Verbal, and Ameliorative models (the latter two more highly structured) performed significantly better than children in the Montessori and Community-Based Traditional programs.

Some comparative research studies have also focused on one or more specific effects of different preschool programs. Dreyer and Rigler (1969) found significant differences in the cognitive

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functioning of middle class Montessori and Traditional nursery children with Montessori children being more task oriented and Traditional nursery children obtaining significantly higher creativity scores.

However, most studies of preschool effectiveness use either (1) an experimental population of disadvantaged children with low and/or middle class control groups or (2) experimental population only. This study seeks to examine the effect of different curricula across socioeconomic levels. The following describes the four programs:

(a) Cognitive Model

This model utilizes Piagetian theory in the development of content, levels of operation (verbal and motor) and levels of representation (object, symbol, sign). Children are placed in small groups on the basis of level of cognitive functioning and practicipate in 20 to 30 minutes of teacher structured activity in the areas of classification, seriation, space and number and communication skills. The rest of each day resembles a traditional nursery program with ample opportunity for free play. Goals are defined broadly to also include socio-emotional and sensorimotor development.

(b) Unit-Based Model

The unit-based approach is an adaptation of a traditional nursery approach in which the teacher plans sequenced activities in conceptual, science, and sensorimotor sub-units which generally relate in some way to the general unit topic. The general unit topics (Machines That Work for Us, Homes and Families, etc.) are

determined by the teacher. A large block of time is devoted to Structured Play (80 minutes). Goals are defined broadly to include intellectual, social-emotional and sensorimotor development.

(c) Montessori

This curriculum emphasizes sensory training through sequenced, self-correcting materials (many of which involve some aspects of classification and seriation). Cognitive activities are self-directed, self-selected, and intrinsically motivating. Social training is accomplished through practical tasks.

(d) Model Cities Day Care

This is essentially a traditional nursery curriculum with an emphasis on play as the medium for the development of curiosity and positive attitudes toward learning, self-esteem, expressive language, social, and gross and fine motor skills.

## METHOD

The study employed a quasi-experimental design; pre and post measures were obtained on two experimental groups (E1 & E2) of middle class socioeconomic status representing the "cognitive" and "unit" based preschool programs. A control group (C1) was obtained by matching the experimental groups with a comparable group without preschool experience. Pre and post measures were also obtained on low socioeconomic children exposed to either a Montessori preschool program (E3) or a Day Care program (E4). A control group (C2) was obtained by matching. Thus, six groups of children

were involved in the study; four types of preschool experiences plus the controls representing the different socioeconomic statuses. All the children were administered test batteries comprising 14 measures: (1) the Sentences, Arithmetic, Comprehension and Mazes subtests of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), (2) the Reading subtest of the Wide Range Achievement Test, (3) the Dog and Bone Test and the Early Childhood Matching Familiar Figures Test of the Cincinnati Autonomy Test Battery (CATB), (4) the Peabody Picture Vocabulary Test (PPVT), (5) two factors of the Kohn Competence Rating Scale, (6) the Color Recognition Test, the Tape Recording-Collage and the Tape Recording-Home*, and (7) the Walk-A-Line. The treatment lasted for a total of twenty weeks.

## POPULATION

The subjects were 3 and 4 year-old children from low and middle class socioeconomic backgrounds. The middle class children in the E1 and E2 groups were enrolled in the Kent State University Preschool Education Program. The level of education of the head of the household for all but one of the children in groups E1 and E2 was at least college graduate. The occupational status of the head of the household (with the exception of two gradaute students) in the E1 and E2 groups was comparable to the occupational status of the C1 control group (occupational status was determined by ratings on the Warner Revised Scale for Rating Occupations). The children in the E1, E2, and C1 groups came from families in which both parents were living in the household. The mean age of E1

*developed by the principal author.

and E2 children was 49.2 months; the mean age of the C1 children was 48.2 months. The proportion of males in the E1 and E2 groups was .54; the proportion of males in the C1 group was .52. The E3, E4, and C2 groups of children were matched on the basis of age in months, sex, race, size of household, and socioeconomic index derived from the occupation, education, and income of the heads of the households. The E3, E4, and C2 groups were comparable to the E1, E2, and C1 groups with respect to age and sex.

## RESULTS

A two-way analysis of variance with repeated measures on two factors (method-period) was computed on the individual pre and post-test scores of the subjects in the E1 and E2 groups. The relevant hypothesis concerned the effectiveness of preschool program (E1 or E2) with middle class socioeconomic children. The results indicated significance on 10 of the 14 dependent measures with respect to validating the hypothesis that significant change occurred between pre and posttesting (Table 1). Also, the E2 group (unit based

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Insert Table 1 about here

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middle class) performed significantly better on the PPVT than did the E1 group (cognitive based middle class). This latter result is based on analysis of covariance, using the pretest scores as covariates ($p < .05$).

One-way analyses of variance across the six groups (E1, E2, C1, E3, E4, and C2) yielded significance on 11 of the dependent

variables (Table 2). The Scheffe method indicated that the E1

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Insert Table 2 about here

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and E2 posttest scores were significantly greater than the C1 posttest scores (Table 3). In addition, the E1 and E2 posttest scores were significantly greater than the E3 and E4 posttest scores on 9 dependent variables (Table 4). Finally, the amount

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Insert Tables 3 & 4 about here

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of gain that the E1 and E2 groups had over their pretest levels was significantly greater on one dependent variable ($p < .05$) and approached significance on three other dependent variables ($p < .10$) than the amount of gain the E3 and E4 groups had over their pretest performances (Table 5). Figures 1-3 illustrate the relative

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Insert Table 5 about here

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posttest differences on the 12 dependent variables across the six groups.

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Insert Figures 1-3 about here

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Inspection of the results lends support to the notions that: (1) middle class children, regardless of type of curricula (unit-based or cognitive-based), profited from preschool experience with respect to cognitive, sensorimotor, and language development; (2) middle class children, to a degree, profited more from the preschool

experiences than lower class children; (3) lower class children who experienced preschool evidenced significant gains across most all dependent variables. These children, regardless of curricula (Montessori or Day Care), approached the middle class children who did not experience preschool. In summary, the results generally support the notion that preschool experience, irrespective of type of curricula, profits both lower and middle class children.

## DISCUSSION

The consistent discrepancies in the level of posttest performance produced by the comparison of the middle class children to the lower class children indicated that socioeconomic placement contributes more to the educational development of the children than preschool experience. The effect of preschool for lower class children was to increase their level of competence, however, preschool alone is not sufficient to attenuate the discrepancy between the lower and middle class children. Consequently, perhaps the alternative of involving the parents in educational programs warrants consideration. Thus, the combined efforts of a parent educational program and preschool experience for their children may be effective in bringing the lower class childrens' educational development up to a level commensurate with their middle class peers.

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TABLE 1

Summary of Two-way Analysis of Variance for Cognitive-Unit and Pre-Post Conditions across Fourteen Variables

| Variable | Source | F |
|---|---|---|
| Task Initiation | Cognitive-Unit | .02 |
| | Pre-Post | .36 |
| | Interaction | .04 |
| Color Recognition | Cognitive-Unit | 1.72 |
| | Pre-Post | 1.66 |
| | Interaction | .00 |
| Matching Familiar Figures | Cognitive-Unit | .04 |
| | Pre-Post | 19.08** |
| | Interaction | 2.12 |
| Letter Recognition | Cognitive-Unit | .33 |
| | Pre-Post | 37.07** |
| | Interaction | 2.75 |
| Tape-Collage | Cognitive-Unit | .14 |
| | Pre-Post | 5.98* |
| | Interaction | .03 |
| Tape-Home | Cognitive-Unit | .67 |
| | Pre-Post | .06 |
| | Interaction | .99 |
| Walk-A-Line | Cognitive-Unit | .13 |
| | Pre-Post | 20.29** |
| | Interaction | 1.46 |
| WPPSI-Arithmetic | Cognitive-Unit | .22 |
| | Pre-Post | 24.68** |
| | Interaction | .46 |
| WPPSI-Comprehension | Cognitive-Unit | 2.87 |
| | Pre-Post | 24.04** |
| | Interaction | .01 |
| WPPSI-Sentences | Cognitive-Unit | .43 |
| | Pre-Post | 2.62 |
| | Interaction | .55 |
| WPPSI-Mazes | Cognitive-Unit | .99 |
| | Pre-Post | 8.14** |
| | Interaction | .38 |

TABLE 1 continued

| Variable | Source | F |
|---|---|---|
| PPVT | Cognitive-Unit | 4.79* |
| | Pre-Post | 19.49** |
| | Interaction | .66 |
| Kohn Factor I | Cognitive-Unit | .53 |
| | Pre-Post | .01 |
| | Interaction | .24 |
| Kohn-Factor II | Cognitive-Unit | 5.77* |
| | Pre-Post | 3.16 |
| | Interaction | .03 |

*significant at the .05 level, df = 1,22.
**significant at the .01 level, df = 1,22.

TABLE 2

Summary of Analysis of Variance on Twelve Dependent Variables Across Six Groups

| Measure | Grand Mean | Std. Dev. | F | P less than |
|---|---|---|---|---|
| Task Initiation | 1.75 | 1.11 | .32 | .899 |
| Color Recognition | 5.53 | 2.85 | 6.05 | .000 |
| Matching Familiar Figures | 6.47 | 2.47 | 9.21 | .000 |
| Letter Recognition | 14.14 | 9.16 | 15.90 | .000 |
| Tape-Collage | 21.35 | 15.33 | 12.37 | .000 |
| Tape-Home | 24.45 | 18.75 | 8.96 | .000 |
| Walk-A-Line | 8.14 | 2.77 | 2.73 | .022 |
| WPPSI-Arithmetic | 6.99 | 3.60 | 13.19 | .000 |
| WPPSI-Comprehension | 8.58 | 5.80 | 11.44 | .000 |
| WPPSI-Sentences | 9.81 | 5.55 | 6.11 | .000 |
| WPPSI-Mazes | 6.37 | 5.26 | 13.67 | .000 |
| Peabody Picture Vocabulary | 40.87 | 13.38 | 22.15 | .000 |

**TABLE 3**

Summary of the Comparison Between the Advantaged Preschool Groups (E1 and E2) and the Advantaged No-Preschool (C1) Group on Twelve Measures

| Measure | Comparison Value |
|---|---|
| Task Initiation | .10 |
| Color Recognition | 1.67 |
| Matching Familiar Figures | 2.71 |
| Letter Recognition | 4.91** |
| Tape-Collage | 5.24** |
| Tape-Home | 4.32** |
| Walk-A-Line | .52 |
| WPPSI-Arithmetic | 3.69* |
| WPPSI-Comprehension | 2.72 |
| WPPSI-Sentences | 2.53 |
| WPPSI-Mazes | 4.48** |
| Peabody Picture Vocabulary Test | 2.25 |

*significant at .05 level
**significant at .01 level

TABLE 4

Summary of the Comparison Between the Advantaged Preschool Groups (E1 and E2) and the Disadvantaged Preschool Groups (E3 and E4) on Twelve Measures

| Measure | Comparison Value |
|---|---|
| Task Initiation | 2.21 |
| Color Recognition | 3.14 |
| Matching Familiar Figures | 5.68** |
| Letter Recognition | 8.54** |
| Tape-Collage | 6.47** |
| Tape-Home | 5.31** |
| Walk-A-Line | .89 |
| WPPSI-Arithmetic | 6.18** |
| WPPSI-Comprehension | 6.43** |
| WPPSI-Sentences | 4.29** |
| WPPSI-Mazes | 7.10** |
| Peabody Picture Vocabulary Test | 7.15** |

**significant at .01 level

TABLE 5

Summary of the Difference Scores Between the Advantaged Pre-School Group and the Advantaged No-Preschool Group Compared with the Difference Scores Between the Disadvantaged Preschool Group and the Disadvantaged No-Preschool Group

| Measure | Comparison Value |
|---|---|
| Task Initiation | .25 |
| Color Recognition | .86 |
| Matching Familiar Figures | .91 |
| Letter Recognition | 3.66* |
| Tape-Collage | 2.51** |
| Tape-Home | 2.07** |
| Walk-A-Line | 1.62 |
| WPPSI-Arithmetic | .89 |
| WPPSI-Comprehension | 1.16 |
| WPPSI-Sentences | .56 |
| WPPSI-Mazes | 2.46** |
| Peabody Picture Vocabulary Test | 1.13 |

*significant at .05 level
**significant at .10 level

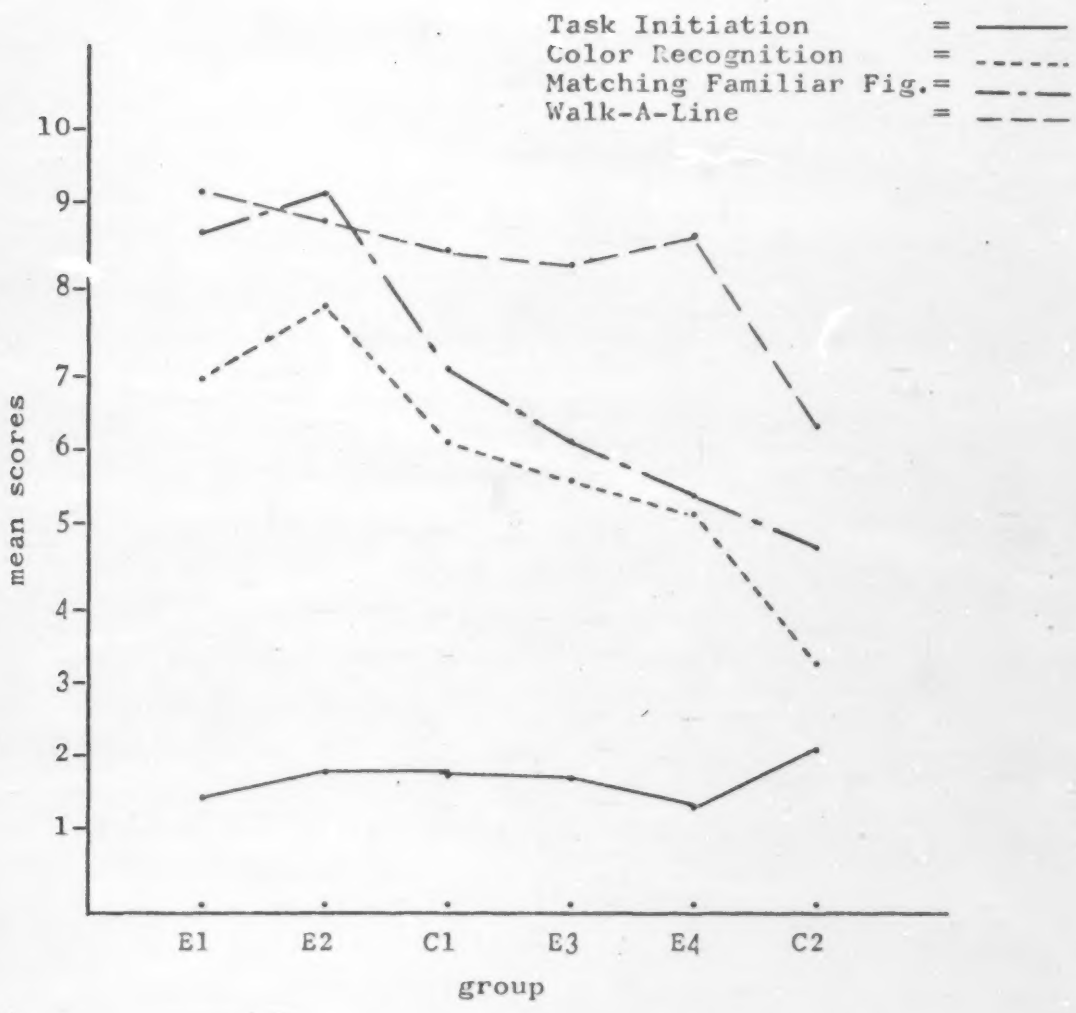


Fig. 1 - Posttest mean scores on the Task Initiation, Color Recognition, Matching Familiar Figures, and Walk-A-Line subtests as a function of group membership.

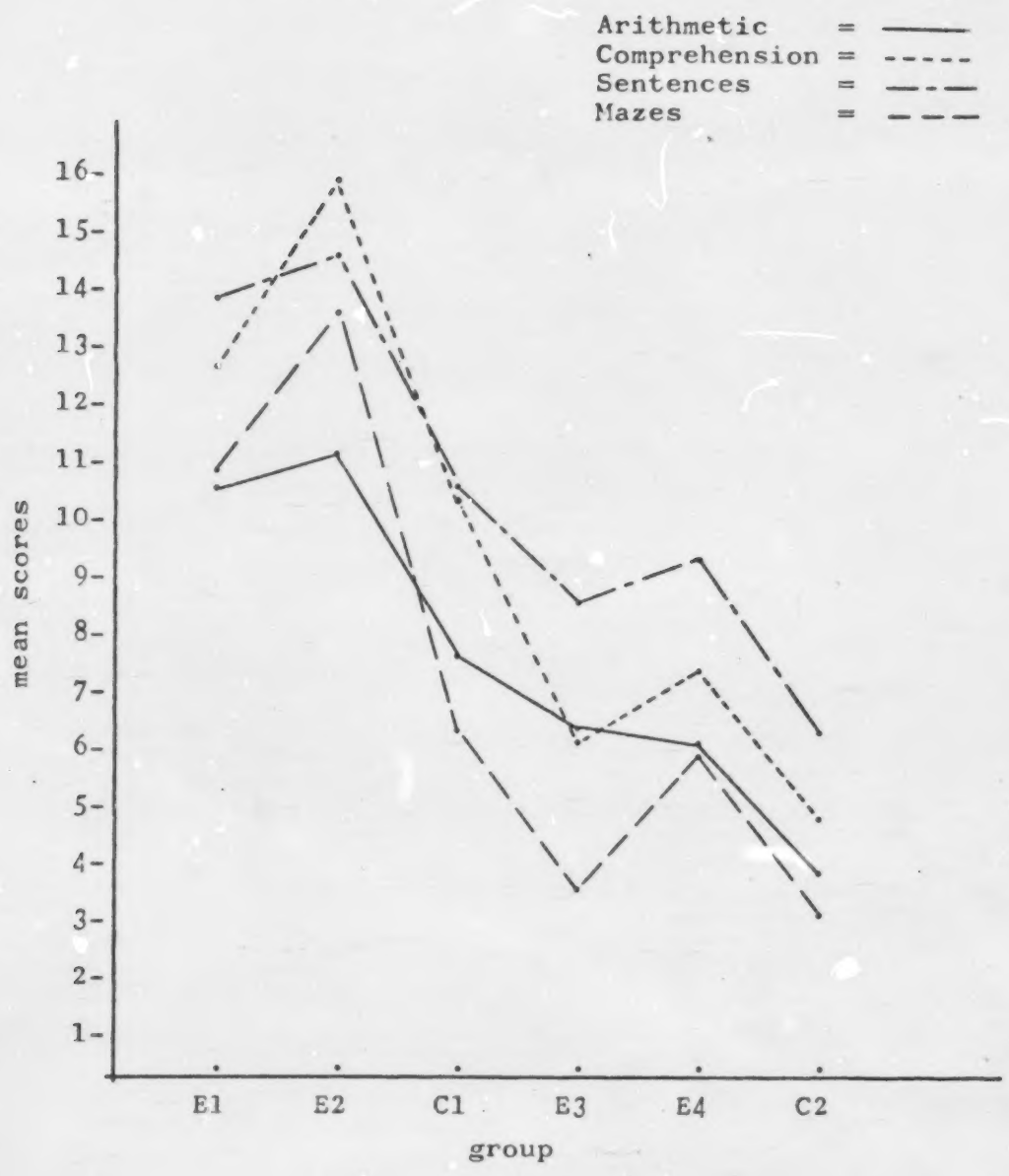


Fig. 2 - Posttest mean scores on the WPPSI subtests of Arithmetic, Comprehension, Sentences, and Mazes as a function of group membership.

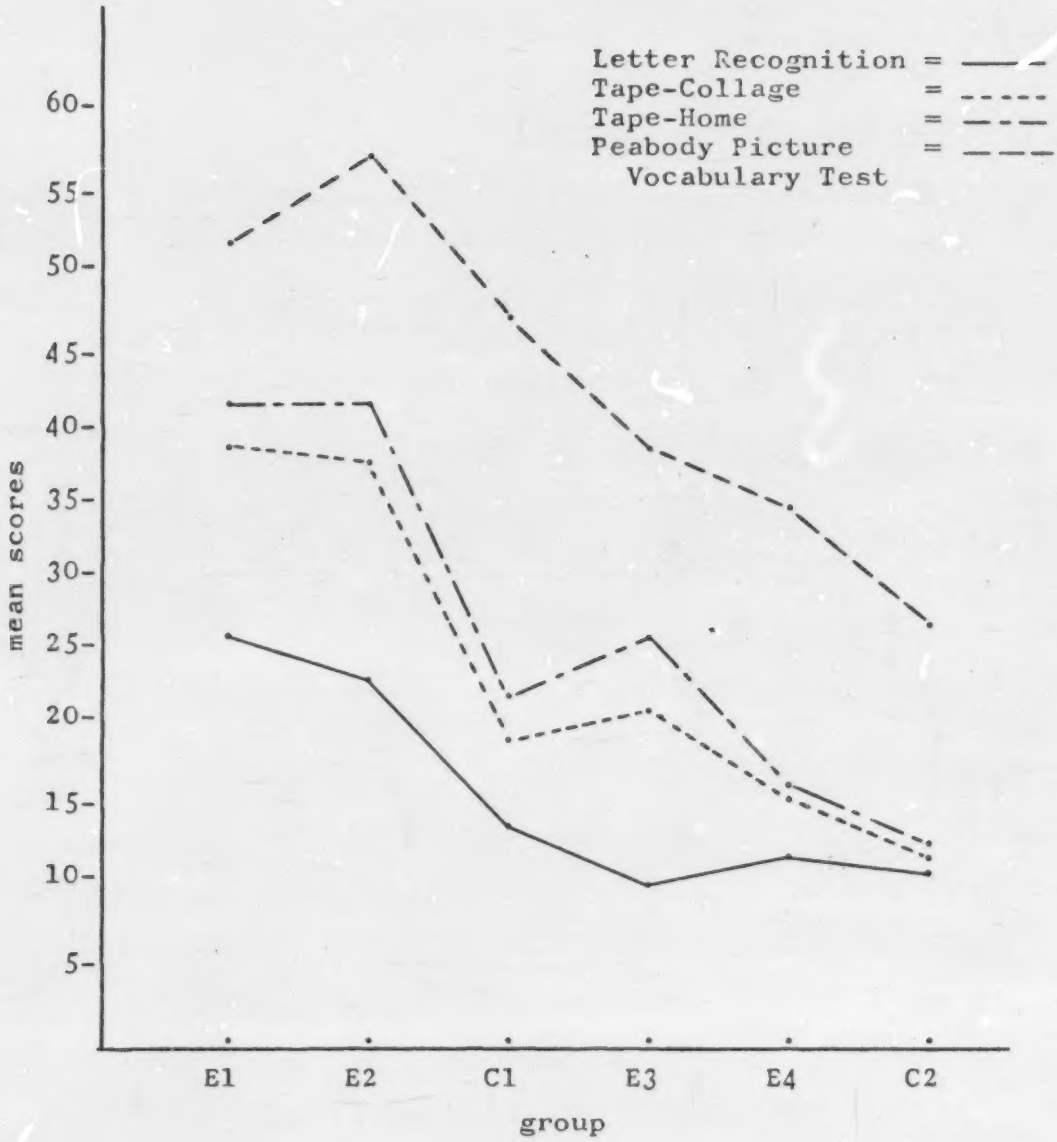


Fig. 3 - Posttest mean scores on the Letter Recognition, Tape-Collage, Tape-Home, and Peabody Picture Vocabulary subtests as a function of group membership.